

109TH CONGRESS  
2D SESSION

# H. R. 6203

To provide for Federal energy research, development, demonstration, and commercial application activities, and for other purposes.

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## IN THE HOUSE OF REPRESENTATIVES

SEPTEMBER 27, 2006

Mrs. BIGGERT (for herself, Mr. BOEHLERT, Mr. GORDON, Mr. SMITH of Texas, Mr. McCAUL of Texas, Mr. REICHERT, Mr. WELDON of Pennsylvania, Mr. BARTLETT of Maryland, Mr. CALVERT, Mr. EHLERS, Mr. INGALLIS of South Carolina, Mr. AL GREEN of Texas, Mr. WAMP, Mr. ROHRABACHER, Mr. MARIO DIAZ-BALART of Florida, Mr. HALL, Mr. SCHWARZ of Michigan, Mr. GILCHREST, Mr. JOHNSON of Illinois, and Ms. GRANGER) introduced the following bill; which was referred to the Committee on Science

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## A BILL

To provide for Federal energy research, development, demonstration, and commercial application activities, and for other purposes.

1       *Be it enacted by the Senate and House of Representa-*  
2       *tives of the United States of America in Congress assembled,*

3       **SECTION 1. SHORT TITLE.**

4       This Act may be cited as the “Alternative Energy Re-  
5       search and Development Act”.

6       **SEC. 2. DEFINITIONS.**

7       For the purposes of this Act—

1           (1) the term “biomass” has the meaning given  
2           that term in section 932(a)(1) of the Energy Policy  
3           Act of 2005 (42 U.S.C. 16232(a)(1));

4           (2) the term “cellulosic feedstock” has the  
5           meaning given the term “lignocellulosic feedstock”  
6           in section 932(a)(2) of the Energy Policy Act of  
7           2005 (42 U.S.C. 16232(a)(2));

8           (3) the term “Department” means the Depart-  
9           ment of Energy;

10          (4) the term “institution of higher education”  
11          has the meaning given that term in section 101(a)  
12          of the Higher Education Act of 1965 (20 U.S.C.  
13          1001(a));

14          (5) the term “National Laboratory” has the  
15          meaning given the term “nonmilitary energy labora-  
16          tory” in section 903(3) of the Energy Policy Act of  
17          2005 (42 U.S.C. 16182(3)); and

18          (6) the term “Secretary” means the Secretary  
19          of Energy.

20   **SEC. 3. ADVANCED BIOFUEL TECHNOLOGIES.**

21          (a) IN GENERAL.—The Secretary shall carry out a  
22          program of research, development, demonstration, and  
23          commercial application for production of motor and other  
24          fuels from biomass.

1 (b) OBJECTIVES.—The Secretary shall design the  
2 program under this section to—

3 (1) develop technologies that would make eth-  
4 anol produced from cellulosic feedstocks cost com-  
5 petitive with ethanol produced from corn by 2012;

6 (2) conduct research and development on how  
7 to apply advanced genetic engineering and bio-  
8 engineering techniques to increase the efficiency and  
9 lower the cost of industrial-scale production of liquid  
10 fuels from cellulosic feedstocks; and

11 (3) conduct research and development on the  
12 production of hydrocarbons other than ethanol from  
13 biomass.

14 (c) INSTITUTION OF HIGHER EDUCATION GRANTS.—  
15 The Secretary shall designate not less than 10 percent of  
16 the funds appropriated under subsection (d) for each fiscal  
17 year to carry out the program for grants to competitively  
18 selected institutions of higher education around the coun-  
19 try focused on meeting the objectives stated in subsection  
20 (b).

21 (d) AUTHORIZATION OF APPROPRIATIONS.—From  
22 amounts authorized to be appropriated under section  
23 931(c) of the Energy Policy Act of 2005 (42 U.S.C.  
24 16231(c)), there are authorized to be appropriated to the  
25 Secretary to carry out this section—

- 1           (1) \$150,000,000 for fiscal year 2007; and  
2           (2) such sums as may be necessary for each of  
3       the fiscal years 2008 and 2009.

4   **SEC. 4. ADVANCED HYDROGEN STORAGE TECHNOLOGIES.**

- 5       (a) IN GENERAL.—The Secretary shall carry out a  
6   program of research, development, demonstration, and  
7   commercial application for technologies to enable practical  
8   onboard storage of hydrogen for use as a fuel for light-  
9   duty motor vehicles.
- 10      (b) OBJECTIVE.—The Secretary shall design the pro-  
11   gram under this section to develop practical hydrogen  
12   storage technologies that would enable a hydrogen-fueled  
13   light-duty motor vehicle to travel 300 miles before refuel-  
14   ing.

15   **SEC. 5. ADVANCED SOLAR PHOTOVOLTAIC TECHNOLOGIES.**

- 16      (a) IN GENERAL.—The Secretary shall carry out a  
17   program of research, development, demonstration, and  
18   commercial application for advanced solar photovoltaic  
19   technologies.
- 20      (b) OBJECTIVES.—The Secretary shall design the  
21   program under this section to develop technologies that  
22   would—
- 23           (1) make electricity generated by solar photo-  
24   voltaic power cost-competitive by 2015; and

1           (2) enable the widespread use of solar photo-  
2       voltaic power.

3       (c) AUTHORIZATION OF APPROPRIATIONS.—There  
4 are authorized to be appropriated to the Secretary to carry  
5 out this section—

6           (1) \$148,000,000 for fiscal year 2007; and

7           (2) such sums as may be necessary for each of  
8       the fiscal years 2008 through 2011.

9       **SEC. 6. ADVANCED WIND ENERGY TECHNOLOGIES.**

10       (a) IN GENERAL.—The Secretary shall carry out a  
11 program of research, development, demonstration, and  
12 commercial application for advanced wind energy tech-  
13 nologies.

14       (b) OBJECTIVES.—The Secretary shall design the  
15 program under this section to—

16           (1) improve the efficiency and lower the cost of  
17       wind turbines;

18           (2) minimize adverse environmental impacts;  
19       and

20           (3) develop new small-scale wind energy tech-  
21       nologies for use in low wind speed environments.

22       (c) AUTHORIZATION OF APPROPRIATIONS.—There  
23 are authorized to be appropriated to the Secretary to carry  
24 out this section—

25           (1) \$44,000,000 for fiscal year 2007; and

1           (2) such sums as may be necessary for each of  
2           the fiscal years 2008 through 2011.

3   **SEC. 7. CONTINUING PROGRAMS.**

4           The Secretary shall continue to carry out the re-  
5   search, development, demonstration, and commercial ap-  
6   plication activities authorized in sections 921(b)(1) (for  
7   distributed energy), 923 (for micro-cogeneration tech-  
8   nology), and 931(a)(2)(C), (D), and (E)(i) (for geothermal  
9   energy, hydropower, and ocean energy) of the Energy Pol-  
10   icy Act of 2005.

11   **SEC. 8. PLUG-IN HYBRID ELECTRIC VEHICLE TECHNOLOGY**  
12                           **PROGRAM.**

13           (a) SHORT TITLE.—This section may be cited as the  
14   “Plug-In Hybrid Electric Vehicle Act of 2006”.

15           (b) DEFINITIONS.—In this section:

16                   (1) BATTERY.—The term “battery” means a  
17           device or system for the electrochemical storage of  
18           energy.

19                   (2) E85.—The term “E85” means a fuel blend  
20           containing 85 percent ethanol and 15 percent gaso-  
21           line by volume.

22                   (3) ELECTRIC DRIVE TRANSPORTATION TECH-  
23           NOLOGY.—The term “electric drive transportation  
24           technology” means—

1 (A) vehicles that use an electric motor for  
2 all or part of their motive power and that may  
3 or may not use offboard electricity, including  
4 battery electric vehicles, hybrid electric vehicles,  
5 plug-in hybrid electric vehicles, flexible fuel  
6 plug-in hybrid electric vehicles, and electric rail;  
7 and

8 (B) related equipment, including electric  
9 equipment necessary to recharge a plug-in hy-  
10 brid electric vehicle.

11 (4) FLEXIBLE FUEL PLUG-IN HYBRID ELEC-  
12 TRIC VEHICLE.—The term “flexible fuel plug-in hy-  
13 brid electric vehicle” means a plug-in hybrid electric  
14 vehicle warranted by its manufacturer as capable of  
15 operating on any combination of gasoline or E85 for  
16 its onboard internal combustion or heat engine.

17 (5) HYBRID ELECTRIC VEHICLE.—The term  
18 “hybrid electric vehicle” means a vehicle that—

19 (A) can be propelled using liquid combus-  
20 tible fuel and electric power provided by an on-  
21 board battery; and

22 (B) utilizes regenerative power capture  
23 technology to recover energy expended in brak-  
24 ing the vehicle for use in recharging the bat-  
25 tery.

1           (6) PLUG-IN HYBRID ELECTRIC VEHICLE.—The  
2       term “plug-in hybrid electric vehicle” means a hy-  
3       brid electric onroad light-duty vehicle that can be  
4       propelled solely on electric power for a minimum of  
5       20 miles under city driving conditions, and that is  
6       capable of recharging its battery from an offboard  
7       electricity source.

8       (c) PROGRAM.—The Secretary shall conduct a pro-  
9       gram of research, development, demonstration, and com-  
10      mercial application on technologies needed for the develop-  
11      ment of plug-in hybrid electric vehicles and electric drive  
12      transportation, including—

13           (1) high capacity, high efficiency batteries, to—

14                (A) improve battery life, energy storage ca-  
15                pacity, and power delivery capacity, and lower  
16                cost; and

17                (B) minimize waste and hazardous mate-  
18                rial production in the entire value chain, includ-  
19                ing after the end of the useful life of the bat-  
20                teries;

21           (2) high efficiency onboard and offboard charg-  
22      ing components;

23           (3) high power drive train systems for pas-  
24      senger and commercial vehicles and for supporting  
25      equipment;



1           (4) onboard energy management systems, power  
2           trains, and systems integration for plug-in hybrid  
3           electric vehicles, flexible fuel plug-in hybrid electric  
4           vehicles, and hybrid electric vehicles, including effi-  
5           cient cooling systems and systems that minimize the  
6           emissions profile of such vehicles; and

7           (5) lightweight materials, including research,  
8           development, demonstration, and commercial appli-  
9           cation to reduce the cost of materials such as steel  
10          alloys and carbon fibers.

11          (d) PLUG-IN HYBRID ELECTRIC VEHICLE DEM-  
12          ONSTRATION PROGRAM.—

13               (1) ESTABLISHMENT.—The Secretary shall es-  
14               tablish a competitive grant pilot demonstration pro-  
15               gram to provide not more than 25 grants annually  
16               to State governments, local governments and public  
17               entities, metropolitan transportation authorities, or  
18               combinations thereof to carry out a project or  
19               projects for demonstration of plug-in hybrid electric  
20               vehicles.

21               (2) APPLICATIONS.—

22                     (A) REQUIREMENTS.—The Secretary shall  
23                     issue requirements for applying for grants  
24                     under the demonstration pilot program. The  
25                     Secretary shall require that applications, at a

1 minimum, include a description of how data will  
2 be—

3 (i) collected on the—

4 (I) performance of the vehicle or  
5 vehicles and the components, includ-  
6 ing the battery, energy management,  
7 and charging systems, under various  
8 driving speeds, trip ranges, traffic,  
9 and other driving conditions;

10 (II) costs of the vehicle or vehi-  
11 cles, including acquisition, operating,  
12 and maintenance costs, and how the  
13 project or projects will be self-sus-  
14 taining after Federal assistance is  
15 completed; and

16 (III) emissions of the vehicle or  
17 vehicles, including greenhouse gases,  
18 and the amount of petroleum dis-  
19 placed as a result of the project or  
20 projects; and

21 (ii) summarized for dissemination to  
22 the Department, other grantees, and the  
23 public.

24 (B) PARTNERS.—An applicant under sub-  
25 paragraph (A) may carry out a project or

1 projects under the pilot program in partnership  
2 with one or more private or nonprofit entities,  
3 which may include institutions of higher edu-  
4 cation, including Historically Black Colleges  
5 and Universities, Hispanic Serving Institutions,  
6 and other minority-serving institutions.

7 (3) SELECTION CRITERIA.—

8 (A) PREFERENCE.—When making awards  
9 under this subsection, the Secretary shall con-  
10 sider each applicant’s previous experience in-  
11 volving plug-in hybrid electric vehicles and shall  
12 give preference to proposals that—

13 (i) provide the greatest demonstration  
14 per award dollar, with preference increas-  
15 ing as the number of miles that a plug-in  
16 hybrid electric vehicle can be propelled  
17 solely on electric power under city driving  
18 conditions increases; and

19 (ii) maximize the non-Federal share of  
20 project funding and demonstrate the great-  
21 est likelihood that each project proposed in  
22 the application will be maintained or ex-  
23 panded after Federal assistance under this  
24 subsection is completed.

1 (B) BREADTH OF DEMONSTRATIONS.—In  
2 awarding grants under this subsection, the Sec-  
3 retary shall ensure the program will dem-  
4 onstrate plug-in hybrid electric vehicles under  
5 various circumstances, including—

- 6 (i) driving speeds;  
7 (ii) trip ranges;  
8 (iii) driving conditions;  
9 (iv) climate conditions; and  
10 (v) topography,

11 to optimize understanding and function of plug-  
12 in hybrid electric vehicles.

13 (4) PILOT PROJECT REQUIREMENTS.—

14 (A) SUBSEQUENT FUNDING.—An applicant  
15 that has received a grant in one year may apply  
16 for additional funds in subsequent years, but  
17 the Secretary shall not provide more than  
18 \$10,000,000 in Federal assistance under the  
19 pilot program to any applicant for the period  
20 encompassing fiscal years 2007 through fiscal  
21 year 2011.

22 (B) INFORMATION.—The Secretary shall  
23 establish mechanisms to ensure that the infor-  
24 mation and knowledge gained by participants in  
25 the pilot program are shared among the pilot

1 program participants and are available to other  
2 interested parties, including other applicants.

3 (5) AWARD AMOUNTS.—The Secretary shall de-  
4 termine grant amounts, but the maximum size of  
5 grants shall decline as the cost of producing plug-in  
6 hybrid electric vehicles declines or the cost of con-  
7 verting a hybrid electric vehicle to a plug-in hybrid  
8 electric vehicle declines.

9 (e) COST SHARING.—The Secretary shall carry out  
10 the program under this section in compliance with section  
11 988(a) through (d) and section 989 of the Energy Policy  
12 Act of 2005 (42 U.S.C. 16352(a) through (d) and 16353).

13 (f) AUTHORIZATION OF APPROPRIATIONS.—There  
14 are authorized to be appropriated to the Secretary—

15 (1) for carrying out subsection (c),  
16 \$100,000,000 for fiscal year 2008 and such sums as  
17 may be necessary for each of the fiscal years 2009  
18 through 2011; and

19 (2) for carrying out subsection (d),  
20 \$50,000,000 for fiscal year 2008 and such sums as  
21 may be necessary for each of the fiscal years 2009  
22 through 2011.

1 **SEC. 9. PHOTOVOLTAIC DEMONSTRATION PROGRAM.**

2 (a) SHORT TITLE.—This section may be cited as the  
3 “Solar Utilization Now Demonstration Act of 2006” or  
4 the “SUN Act of 2006”.

5 (b) IN GENERAL.—The Secretary shall establish a  
6 program of grants to States to demonstrate advanced pho-  
7 tovoltaic technology.

8 (c) REQUIREMENTS.—

9 (1) ABILITY TO MEET REQUIREMENTS.—To re-  
10 ceive funding under the program under this section,  
11 a State must submit a proposal that demonstrates,  
12 to the satisfaction of the Secretary, that the State  
13 will meet the requirements of subsection (g).

14 (2) COMPLIANCE WITH REQUIREMENTS.—If a  
15 State has received funding under this section for the  
16 preceding year, the State must demonstrate, to the  
17 satisfaction of the Secretary, that it complied with  
18 the requirements of subsection (g) in carrying out  
19 the program during that preceding year, and that it  
20 will do so in the future, before it can receive further  
21 funding under this section.

22 (3) FUNDING ALLOCATION.—Except as pro-  
23 vided in subsection (d), each State submitting a pro-  
24 posal that meets the requirements under subsection  
25 (c) shall receive funding under the program based on  
26 the proportion of United States population in the

1 State according to the 2000 census. In each fiscal  
2 year, the portion of funds attributable under this  
3 paragraph to States that have not submitted pro-  
4 posals that meet the requirements under subsection  
5 (c) in the time and manner specified by the Sec-  
6 retary shall be distributed pro rata to the States  
7 that have submitted proposals that meet the require-  
8 ments under subsection (c) in the specified time and  
9 manner.

10 (d) COMPETITION.—If more than \$80,000,000 is  
11 available for the program under this section for any fiscal  
12 year, the Secretary shall allocate 75 percent of the total  
13 amount of funds available according to subsection (c)(3),  
14 and shall award the remaining 25 percent on a competitive  
15 basis to the States with the proposals the Secretary con-  
16 siderers most likely to encourage the widespread adoption  
17 of photovoltaic technologies. In awarding funds under this  
18 subsection, the Secretary may give preference to proposals  
19 that would demonstrate the use of newer materials or  
20 technologies.

21 (e) PROPOSALS.—Not later than 6 months after the  
22 date of enactment of this Act, and in each subsequent fis-  
23 cal year for the life of the program, the Secretary shall  
24 solicit proposals from the States to participate in the pro-  
25 gram under this section.

1 (f) COMPETITIVE CRITERIA.—In awarding funds in  
2 a competitive allocation under subsection (d), the Sec-  
3 retary shall consider—

4 (1) the likelihood of a proposal to encourage the  
5 demonstration of, or lower the costs of, advanced  
6 photovoltaic technologies; and

7 (2) the extent to which a proposal is likely to—

8 (A) maximize the amount of photovoltaics  
9 demonstrated;

10 (B) maximize the proportion of non-Fed-  
11 eral cost share; and

12 (C) limit State administrative costs.

13 (g) STATE PROGRAM.—A program operated by a  
14 State with funding under this section shall provide com-  
15 petitive awards for the demonstration of advanced photo-  
16 voltaic technologies. Each State program shall—

17 (1) require a contribution of at least 60 percent  
18 per award from non-Federal sources, which may in-  
19 clude any combination of State, local, and private  
20 funds, except that at least 10 percent of the funding  
21 must be supplied by the State;

22 (2) limit awards for any single project to a  
23 maximum of \$1,000,000;

24 (3) prohibit any nongovernmental recipient  
25 from receiving more than \$1,000,000 per year;



1           (4) endeavor to fund recipients in the commer-  
2           cial, industrial, institutional, governmental, and resi-  
3           dential sectors;

4           (5) limit State administrative costs to no more  
5           than 10 percent of the grant;

6           (6) report annually to the Secretary on—

7                   (A) the amount of funds disbursed;

8                   (B) the amount of photovoltaics purchased;

9           and

10                   (C) the results of the monitoring under  
11           paragraph (7);

12           (7) provide for measurement and verification of  
13           the output of a representative sample of the  
14           photovoltaics systems demonstrated throughout the  
15           average working life of the systems, or at least 20  
16           years;

17           (8) require that applicant buildings must have  
18           received an independent energy efficiency audit dur-  
19           ing the 6-month period preceding the filing of the  
20           application; and

21           (9) encourage Historically Black Colleges and  
22           Universities, Hispanic Serving Institutions, and  
23           other minority-serving institutions to apply for  
24           grants under this program.

1       (h) UNEXPENDED FUNDS.—If a State fails to expend  
2 any funds received under subsection (c) or (d) within 3  
3 years of receipt, such remaining funds shall be returned  
4 to the Treasury.

5       (i) REPORTS.—The Secretary shall report to Con-  
6 gress 5 years after funds are first distributed to the States  
7 under this section—

8           (1) the amount of photovoltaics demonstrated;

9           (2) the number of projects undertaken;

10          (3) the administrative costs of the program;

11          (4) the amount of funds that each State has  
12 not received because of a failure to submit a quali-  
13 fying proposal, as described in subsection (c)(3);

14          (5) the results of the monitoring under sub-  
15 section (g)(7); and

16          (6) the total amount of funds distributed, in-  
17 cluding a breakdown by State.

18       (j) AUTHORIZATION OF APPROPRIATIONS.—There  
19 are authorized to be appropriated to the Secretary for the  
20 purposes of carrying out this section—

21           (1) \$50,000,000 for fiscal year 2008; and

22           (2) such sums as may be necessary for each of  
23 the fiscal years 2009 through 2011.

1 **SEC. 10. ENERGY EFFICIENT BUILDING GRANT PROGRAM.**

2 (a) ENERGY EFFICIENT BUILDING PILOT GRANT  
3 PROGRAM.—

4 (1) IN GENERAL.—Not later than 6 months  
5 after the date of enactment of this Act, the Sec-  
6 retary shall establish a pilot program to award  
7 grants to businesses and organizations for new con-  
8 struction of energy efficient buildings, or major ren-  
9 ovations of buildings that will result in energy effi-  
10 cient buildings, to demonstrate innovative energy ef-  
11 ficiency technologies, especially those sponsored by  
12 the Department.

13 (2) AWARDS.—The Secretary shall award  
14 grants under this subsection competitively to those  
15 applicants whose proposals—

16 (A) best demonstrate—

17 (i) likelihood to meet or exceed the  
18 standards referred to in subsection (b)(2);

19 (ii) likelihood to maximize cost-effec-  
20 tive energy efficiency opportunities; and

21 (iii) advanced energy efficiency tech-  
22 nologies; and

23 (B) maximize the leverage of private in-  
24 vestment for costs related to increasing the en-  
25 ergy efficiency of the building.

1           (3) CONSIDERATION.—The Secretary shall give  
2           due consideration to proposals for buildings that are  
3           likely to serve low and moderate income populations.

4           (4) AMOUNT OF GRANTS.—Grants under this  
5           subsection shall be for up to 50 percent of design  
6           and energy modeling costs, not to exceed \$50,000  
7           per building. No single grantee may be eligible for  
8           more than 3 grants per year under this program.

9           (5) GRANT PAYMENTS.—

10           (A) INITIAL PAYMENT.—The Secretary  
11           shall pay 50 percent of the total amount of the  
12           grant to grant recipients upon selection.

13           (B) REMAINDER OF PAYMENT.—The Sec-  
14           retary shall pay the remaining 50 percent of the  
15           grant only after independent certification, by a  
16           professional engineer or other qualified profes-  
17           sional, that operational buildings are energy ef-  
18           ficient buildings as defined in subsection (b).

19           (C) FAILURE TO COMPLY.—The Secretary  
20           shall not provide the remainder of the payment  
21           unless the building is certified within 6 months  
22           after operation of the completed building to  
23           meet the requirements described in subpara-  
24           graph (B), or in the case of major renovations

1 the building is certified within 6 months of the  
2 completion of the renovations.

3 (6) REPORT TO CONGRESS.—Not later than 3  
4 years after awarding the first grant under this sub-  
5 section, the Secretary shall transmit to Congress a  
6 report containing—

7 (A) the total number and dollar amount of  
8 grants awarded under this subsection; and

9 (B) an estimate of aggregate cost and en-  
10 ergy savings enabled by the pilot program  
11 under this subsection.

12 (7) ADMINISTRATIVE EXPENSES.—Administra-  
13 tive expenses for the program under this subsection  
14 shall not exceed 10 percent of appropriated funds.

15 (b) DEFINITION OF ENERGY EFFICIENT BUILD-  
16 ING.—For purposes of this section the term “energy effi-  
17 cient building” means a building that—

18 (1) achieves a reduction in energy consumption  
19 of—

20 (A) at least 30 percent for new construc-  
21 tion, compared to the energy standards set by  
22 the 2004 International Energy Conservation  
23 Code (in the case of residential buildings) or  
24 ASHRAE Standard 90.1–2004; or

1 (B) at least 20 percent for major renova-  
2 tions, compared to energy consumption before  
3 renovations are begun;

4 (2) is constructed or renovated in accordance  
5 with the most current, appropriate, and applicable  
6 voluntary consensus standards, as determined by the  
7 Secretary, such as those listed in the assessment  
8 under section 914(b), or revised or developed under  
9 section 914(c), of the Energy Policy Act of 2005;  
10 and

11 (3) after construction or renovation—

12 (A) uses heating, ventilating, and air con-  
13 ditioning systems that perform at no less than  
14 Energy Star standards; or

15 (B) if Energy Star standards are not ap-  
16 plicable, uses Federal Energy Management Pro-  
17 gram recommended heating, ventilating, and air  
18 conditioning products.

19 (c) AUTHORIZATION OF APPROPRIATIONS.—There  
20 are authorized to be appropriated to the Secretary for car-  
21 rying out this section—

22 (1) \$10,000,000 for fiscal year 2008; and

23 (2) such sums as may be necessary for each of  
24 the fiscal years 2009 through 2011.

1 **SEC. 11. ENERGY TECHNOLOGY TRANSFER.**

2 Section 917 of the Energy Policy Act of 2005 (42  
3 U.S.C. 16197) is amended to read as follows:

4 **“SEC. 917. ADVANCED ENERGY TECHNOLOGY TRANSFER**  
5 **CENTERS.**

6 “(a) GRANTS.—Not later than 18 months after the  
7 date of enactment of the Alternative Energy Research and  
8 Development Act, the Secretary shall make grants to non-  
9 profit institutions, State and local governments, coopera-  
10 tive extension services, or universities (or consortia there-  
11 of), to establish a geographically dispersed network of Ad-  
12 vanced Energy Technology Transfer Centers, to be located  
13 in areas the Secretary determines have the greatest need  
14 of the services of such Centers. In establishing the net-  
15 work, the Secretary shall consider the special needs and  
16 opportunities for increased energy efficiency for manufac-  
17 tured and site-built housing, including construction, ren-  
18 ovation, and retrofit. In making awards under this section,  
19 the Secretary shall—

20 “(1) give priority to applicants already oper-  
21 ating or partnered with an outreach program capa-  
22 ble of transferring knowledge and information about  
23 advanced energy efficiency methods and tech-  
24 nologies;

1           “(2) ensure that, to the extent practicable, the  
2           program enables the transfer of knowledge and in-  
3           formation—

4                   “(A) about a variety of technologies and

5                   “(B) in a variety of geographic areas; and

6           “(3) give preference to applicants that would  
7           significantly expand on or fill a gap in existing pro-  
8           grams in a geographical region.

9           “(b) ACTIVITIES.—Each Center shall operate a pro-  
10          gram to encourage demonstration and commercial applica-  
11          tion of advanced energy methods and technologies through  
12          education and outreach to building and industrial profes-  
13          sionals, and to other individuals and organizations with  
14          an interest in efficient energy use. Funds awarded under  
15          this section may be used for the following activities:

16                   “(1) Developing and distributing informational  
17                  materials on technologies that could use energy more  
18                  efficiently.

19                   “(2) Carrying out demonstrations of advanced  
20                  energy methods and technologies.

21                   “(3) Developing and conducting seminars,  
22                  workshops, long-distance learning sessions, and  
23                  other activities to aid in the dissemination of knowl-  
24                  edge and information on technologies that could use  
25                  energy more efficiently.



1           “(4) Providing or coordinating onsite energy  
2           evaluations, including instruction on the commis-  
3           sioning of building heating and cooling systems, for  
4           a wide range of energy end-users.

5           “(5) Examining the energy efficiency needs of  
6           energy end-users to develop recommended research  
7           projects for the Department.

8           “(6) Hiring experts in energy efficient tech-  
9           nologies to carry out activities described in para-  
10          graphs (1) through (5).

11          “(c) APPLICATION.—A person seeking a grant under  
12          this section shall submit to the Secretary an application  
13          in such form and containing such information as the Sec-  
14          retary may require. The Secretary may award a grant  
15          under this section to an entity already in existence if the  
16          entity is otherwise eligible under this section. The applica-  
17          tion shall include, at a minimum—

18               “(1) a description of the applicant’s outreach  
19               program, and the geographic region it would serve,  
20               and of why the program would be capable of trans-  
21               ferring knowledge and information about advanced  
22               energy technologies that increase efficiency of energy  
23               use;

24               “(2) a description of the activities the applicant  
25               would carry out, of the technologies that would be

1 transferred, and of any other organizations that will  
2 help facilitate a regional approach to carrying out  
3 those activities;

4 “(3) a description of how the proposed activities  
5 would be appropriate to the specific energy needs of  
6 the geographic region to be served;

7 “(4) an estimate of the number and types of  
8 energy end-users expected to be reached through  
9 such activities; and

10 “(5) a description of how the applicant will as-  
11 sess the success of the program.

12 “(d) SELECTION CRITERIA.—The Secretary shall  
13 award grants under this section on the basis of the fol-  
14 lowing criteria, at a minimum:

15 “(1) The ability of the applicant to carry out  
16 the proposed activities.

17 “(2) The extent to which the applicant will co-  
18 ordinate the activities of the Center with other enti-  
19 ties as appropriate, such as State and local govern-  
20 ments, utilities, universities, and National Labora-  
21 tories.

22 “(3) The appropriateness of the applicant’s out-  
23 reach program for carrying out the program de-  
24 scribed in this section.

1           “(4) The likelihood that proposed activities  
2           could be expanded or used as a model for other  
3           areas.

4           “(e) COST-SHARING.—In carrying out this section,  
5           the Secretary shall require cost-sharing in accordance with  
6           the requirements of section 988 for commercial application  
7           activities.

8           “(f) DURATION.—

9           “(1) INITIAL GRANT PERIOD.—A grant awarded  
10          under this section shall be for a period of 5 years.

11          “(2) INITIAL EVALUATION.—Each grantee  
12          under this section shall be evaluated during its third  
13          year of operation under procedures established by  
14          the Secretary to determine if the grantee is accom-  
15          plishing the purposes of this section described in  
16          subsection (a). The Secretary shall terminate any  
17          grant that does not receive a positive evaluation. If  
18          an evaluation is positive, the Secretary may extend  
19          the grant for 3 additional years beyond the original  
20          term of the grant.

21          “(3) ADDITIONAL EXTENSION.—If a grantee re-  
22          ceives an extension under paragraph (2), the grantee  
23          shall be evaluated again during the second year of  
24          the extension. The Secretary shall terminate any  
25          grant that does not receive a positive evaluation. If

1 an evaluation is positive, the Secretary may extend  
2 the grant for a final additional period of 3 additional  
3 years beyond the original extension.

4 “(4) LIMITATION.—No grantee may receive  
5 more than 11 years of support under this section  
6 without reapplying for support and competing  
7 against all other applicants seeking a grant at that  
8 time.

9 “(g) PROHIBITION.—None of the funds awarded  
10 under this section may be used for the construction of fa-  
11 cilities.

12 “(h) DEFINITIONS.—For purposes of this section:

13 “(1) ADVANCED ENERGY METHODS AND TECH-  
14 NOLOGIES.—The term ‘advanced energy methods  
15 and technologies’ means all methods and tech-  
16 nologies that promote energy efficiency and con-  
17 servation, including distributed generation tech-  
18 nologies, and life-cycle analysis of energy use.

19 “(2) CENTER.—The term ‘Center’ means an  
20 Advanced Energy Technology Transfer Center estab-  
21 lished pursuant to this section.

22 “(3) DISTRIBUTED GENERATION.—The term  
23 ‘distributed generation’ means an electric power gen-  
24 eration technology, including photovoltaic, small

1 wind and micro-combined heat and power, that is  
 2 designed to serve retail electric consumers on-site.

3 “(4) COOPERATIVE EXTENSION.—The term  
 4 ‘Cooperative Extension’ means the extension services  
 5 established at the land-grant colleges and univer-  
 6 sities under the Smith-Lever Act of May 8, 1914.

7 “(5) LAND-GRANT COLLEGES AND UNIVER-  
 8 SITIES.—The term ‘land-grant colleges and univer-  
 9 sities’ means—

10 “(A) 1862 Institutions (as defined in sec-  
 11 tion 2 of the Agricultural Research, Extension,  
 12 and Education Reform Act of 1998 (7 U.S.C.  
 13 7601));

14 “(B) 1890 Institutions (as defined in sec-  
 15 tion 2 of that Act); and

16 “(C) 1994 Institutions (as defined in sec-  
 17 tion 2 of that Act).

18 “(i) AUTHORIZATION OF APPROPRIATIONS.—In addi-  
 19 tion to amounts otherwise authorized to be appropriated  
 20 in section 911, there are authorized to be appropriated  
 21 for the program under this section such sums as may be  
 22 appropriated.”.

23 **SEC. 12. GREEN ENERGY EDUCATION.**

24 (a) DEFINITION.—For the purposes of this section:

1           (1) DIRECTOR.—The term “Director” means  
2           the Director of the National Science Foundation.

3           (2) HIGH PERFORMANCE BUILDING.—The term  
4           “high performance building” has the meaning given  
5           that term in section 914(a) of the Energy Policy Act  
6           of 2005 (42 U.S.C. 16194(a)).

7           (b) GRADUATE TRAINING IN ENERGY RESEARCH  
8           AND DEVELOPMENT.—

9           (1) FUNDING.—In carrying out research, devel-  
10          opment, demonstration, and commercial application  
11          activities authorized for the Department, the Sec-  
12          retary may contribute funds to the National Science  
13          Foundation for the Integrative Graduate Education  
14          and Research Traineeship program to support  
15          projects that enable graduate education related to  
16          such activities.

17          (2) CONSULTATION.—The Director shall con-  
18          sult with the Secretary when preparing solicitations  
19          and awarding grants for projects described in para-  
20          graph (1).

21          (c) CURRICULUM DEVELOPMENT FOR HIGH PER-  
22          FORMANCE BUILDING DESIGN.—

23          (1) FUNDING.—In carrying out advanced en-  
24          ergy technology research, development, demonstra-  
25          tion, and commercial application activities author-

1        ized for the Department related to high performance  
2        buildings, the Secretary may contribute funds to  
3        curriculum development activities at the National  
4        Science Foundation for the purpose of improving un-  
5        dergraduate or graduate interdisciplinary engineer-  
6        ing and architecture education related to the design  
7        and construction of high performance buildings, in-  
8        cluding development of curricula, of laboratory ac-  
9        tivities, of training practicums, or of design projects.  
10       A primary goal of curriculum development activities  
11       supported under this section shall be to improve the  
12       ability of engineers, architects, and planners to work  
13       together on the incorporation of advanced energy  
14       technologies during the design and construction of  
15       high performance buildings.

16       (2) CONSULTATION.—The Director shall con-  
17       sult with the Secretary when preparing solicitations  
18       and awarding grants for projects described in para-  
19       graph (1).

20       (3) PRIORITY.—In awarding grants with re-  
21       spect to which the Secretary has contributed funds  
22       under this subsection, the Director shall give priority  
23       to applications from departments, programs, or cen-  
24       ters of a school of engineering that are partnered  
25       with schools, departments, or programs of design,

1        architecture, and city, regional, or urban planning,  
2        and due consideration to applications from Histori-  
3        cally Black Colleges and Universities and other mi-  
4        nority serving institutions.

5    **SEC. 13. ARPA-E STUDY.**

6        (a) IN GENERAL.—The Secretary shall enter into an  
7        arrangement with the National Academy of Sciences to  
8        conduct a detailed study of, and make further rec-  
9        ommendations on, the October 2005 National Academy of  
10       Sciences recommendation to establish an Advanced Re-  
11       search Projects Agency—Energy (in this section referred  
12       to as ARPA-E).

13       (b) REPORT.—Not later than 12 months after the  
14       date of enactment of this Act, the Secretary shall transmit  
15       to Congress the study described in subsection (a) and the  
16       Secretary’s response to the findings, conclusions, and rec-  
17       ommendations of that study.

18       (c) TERMS OF REFERENCE.—The Secretary shall en-  
19       sure that the study described in subsection (a) addresses  
20       the following questions:

21                (1) What basic research related to new energy  
22        technologies is occurring now, what entities are  
23        funding it, and what is preventing the results of that  
24        research from reaching the market?



1           (2) What economic evidence indicates that the  
2           limiting factor in the market penetration of new en-  
3           ergy technologies is a lack of basic research on path-  
4           breaking new technologies? What barriers do those  
5           trying to develop new energy technologies face dur-  
6           ing later stages of research and development?

7           (3) To what extent is the Defense Advanced  
8           Research Projects Agency an appropriate model for  
9           an energy research agency, given that the Federal  
10          Government would not be the primary customer for  
11          its technology and where cost is an important con-  
12          cern?

13          (4) How would research and development spon-  
14          sored by ARPA-E differ from research and develop-  
15          ment conducted by the National Laboratories or  
16          sponsored by the Department through the Office of  
17          Science, the Office of Energy Efficiency and Renew-  
18          able Energy, the Office of Fossil Energy, the Office  
19          of Electricity Delivery and Energy Reliability, and  
20          the Office of Nuclear Energy?

21          (5) Should industry or National Laboratories be  
22          recipients of ARPA-E grants? What institutional or  
23          organizational arrangements would be required to  
24          ensure that ARPA-E sponsors transformational,  
25          rather than incremental, research and development?

1 **SEC. 14. COAL METHANATION.**

2 (a) PROGRAM.—The Secretary shall establish a pro-  
3 gram of research, development, demonstration, and com-  
4 mercial application of coal gasification facilities that con-  
5 vert coal into pipeline quality gaseous fuels for direct use  
6 or subsequent chemical or physical conversion.

7 (b) PROCEDURES.—The program established under  
8 subsection (a) shall be carried out using procedures de-  
9 scribed in title XVII of the Energy Policy Act of 2005.

10 **SEC. 15. ALTERNATIVE BIOBASED FUELS AND ULTRA LOW**  
11 **SULFUR DIESEL.**

12 (a) ALTERNATIVE FUEL AND ULSD INFRASTRUC-  
13 TURE AND ADDITIVES RESEARCH AND DEVELOPMENT.—  
14 The Secretary, in consultation with the National Institute  
15 of Standards and Technology, shall carry out a program  
16 of research, development, demonstration, and commercial  
17 application of materials to be added to alternative  
18 biobased fuels and Ultra Low Sulfur Diesel fuels to make  
19 them more compatible with existing infrastructure used to  
20 store and deliver petroleum-based fuels to the point of  
21 final sale. The program shall address—

22 (1) materials to prevent or mitigate—

23 (A) corrosion of metal, plastic, rubber,  
24 cork, fiberglass, glues, or any other material  
25 used in pipes and storage tanks;

26 (B) dissolving of storage tank sediments;

1 (C) clogging of filters;

2 (D) contamination from water or other  
3 adulterants or pollutants;

4 (E) poor flow properties related to low  
5 temperatures;

6 (F) oxidative and thermal instability in  
7 long-term storage and use;

8 (G) increased volatile emissions;

9 (H) microbial contamination;

10 (I) problems associated with electrical con-  
11 ductivity; and

12 (J) increased nitrogen oxide emissions;

13 (2) alternatives to conventional methods for re-  
14 furbishment and cleaning of gasoline and diesel  
15 tanks, including tank lining applications; and

16 (3) other problems as identified by the Sec-  
17 retary in consultation with the National Institute of  
18 Standards and Technology.

19 (b) SULFUR TESTING FOR DIESEL FUELS.—

20 (1) PROGRAM.—The Secretary, in consultation  
21 with the National Institute of Standards and Tech-  
22 nology, shall carry out a research, development, and  
23 demonstration program on portable, low-cost, and  
24 accurate methods and technologies for testing of sul-

1       fur content in fuel, including Ultra Low Sulfur Die-  
2       sel and Low Sulfur Diesel.

3           (2) SCHEDULE OF DEMONSTRATIONS.—Not  
4       later than 1 year after the date of enactment of this  
5       Act, the Secretary shall begin demonstrations of  
6       technologies under paragraph (1).

7       (c) STANDARD REFERENCE MATERIALS AND DATA  
8       BASE DEVELOPMENT.—Not later than 6 months after the  
9       date of enactment of this Act, the National Institute of  
10      Standards and Technology shall develop a physical prop-  
11      erties data base and standard reference materials for al-  
12      ternative fuels. Such data base and standard reference  
13      materials shall be maintained and updated as appropriate  
14      as additional alternative fuels become available.

15   **SEC. 16. BIOENERGY.**

16       (a) AUTHORIZATION OF APPROPRIATIONS.—Section  
17      931 of the Energy Policy Act of 2005 (42 U.S.C. 16231)  
18      is amended—

19           (1) in subsection (c)(1), by inserting “, includ-  
20      ing \$25,000,000 for section 932(d)(1)(B)(v)” after  
21      “section 932(d)”;

22           (2) in subsection (c)(2), by inserting “, includ-  
23      ing \$25,000,000 for section 932(d)(1)(B)(v)” after  
24      “section 932(d)”; and

1           (3) in subsection (c)(3), by inserting “, includ-  
2       ing \$25,000,000 for section 932(d)(1)(B)(v)” after  
3       “section 932(d)”.

4       (b) BIOENERGY PROGRAM.—Section 932(d)(1)(B) of  
5 the Energy Policy Act of 2005 (42 U.S.C.  
6 16232(d)(1)(B)) is amended—

7           (1) by striking “and” at the end of clause (iii);  
8       and

9           (2) by adding after clause (iv) the following new  
10       clause:

11                       “(v) biodegradable natural plastics  
12                       from biomass; and”.

○